

THE CITY OF BRYANT, ARKANSAS



CORRECTIVE ACTION PLAN

LIS 16-057, AFIN 63-0065, NPDES PERMIT No.: AR0034002

DATE: SEPTEMBER 25, 2016

UPDATED: AUGUST 6, 2018

PREPARED FOR:

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SECTION 1

BACKGROUND

1.1 PURPOSE AND SCOPE

The City of Bryant entered into a Consent Administrative Order (CAO) LIS No. 16-057 with the Arkansas Department of Environmental Quality on July 14, 2016. Per the Order and Agreement section a comprehensive Corrective Action Plan with milestone schedule is required for submission on or before September 25, 2016.

1.2 BACKGROUND

The City of Bryant has endeavored to reduce wet weather and dry weather related SSO's by spending approximately \$9.3 Million in equipment, engineering, and construction since 2008. **Table 1, Table 2, and Table 3** outline the cost and time table for the projects related to SSO reduction. Through these efforts and expenditures the City of Bryant has effectively reduced the SSO frequency and volume from 2008 to 2015. **Exhibit 1 – City of Bryant SSO Frequency and Volume** is included to demonstrate the reduction.

The City of Bryant has recently contracted with Crist Engineers and RJN Group to provide a Collection System Evaluation and Capacity Assurance Plan that will identify projects to mitigate sanitary sewer overflow as required for the Corrective Action Plan and is further described in Section 2.

Item No.	Begin	End	Description	Amount
1	1/2011	10/2014	SSES and Flow Monitoring	\$303,778
2	1/2011	11/2011	WWTP Aeration System	\$606,811
3	8/2012	8/2013	WWTP Improvements	\$1,803,646
4	7/2012	5/2013	Basin 4, 5, & Stivers Subdivision Rehabilitation	\$892,485
5	4/2013	2/2014	Manhole Rehabilitation	\$593,125
6	8/2015	Ongoing	PS 25 and PS 5 Modifications	\$2,343,540
7	9/2015	Ongoing	Sludge Removal	\$292,352
8	1/2011	Ongoing	Engineering and Administration for All Projects	\$1,093,000
Current Total				\$7,928,737

Table 1-1: Capital Project Cost for SSO Reduction

Item No.	Purchase Date	Description	Amount
1	9/2009	VACCON Vacuum Truck for I&I	\$320,000
2	2010	Ques CCTV Van and Equipment	\$192,230
3	2009	Hurco Smoke Test Equipment	\$4,210
4	2012	Spartan Push CCTV	\$2,500
4	6/2011	Portable Pumps for Pump Stations	\$39,000
5	2014/2015	SCADA Upgrades for 35 Pump Stations	\$264,360
Current Total			\$822,300

Table 1-2: Capital Equipment Cost for SSO Reduction

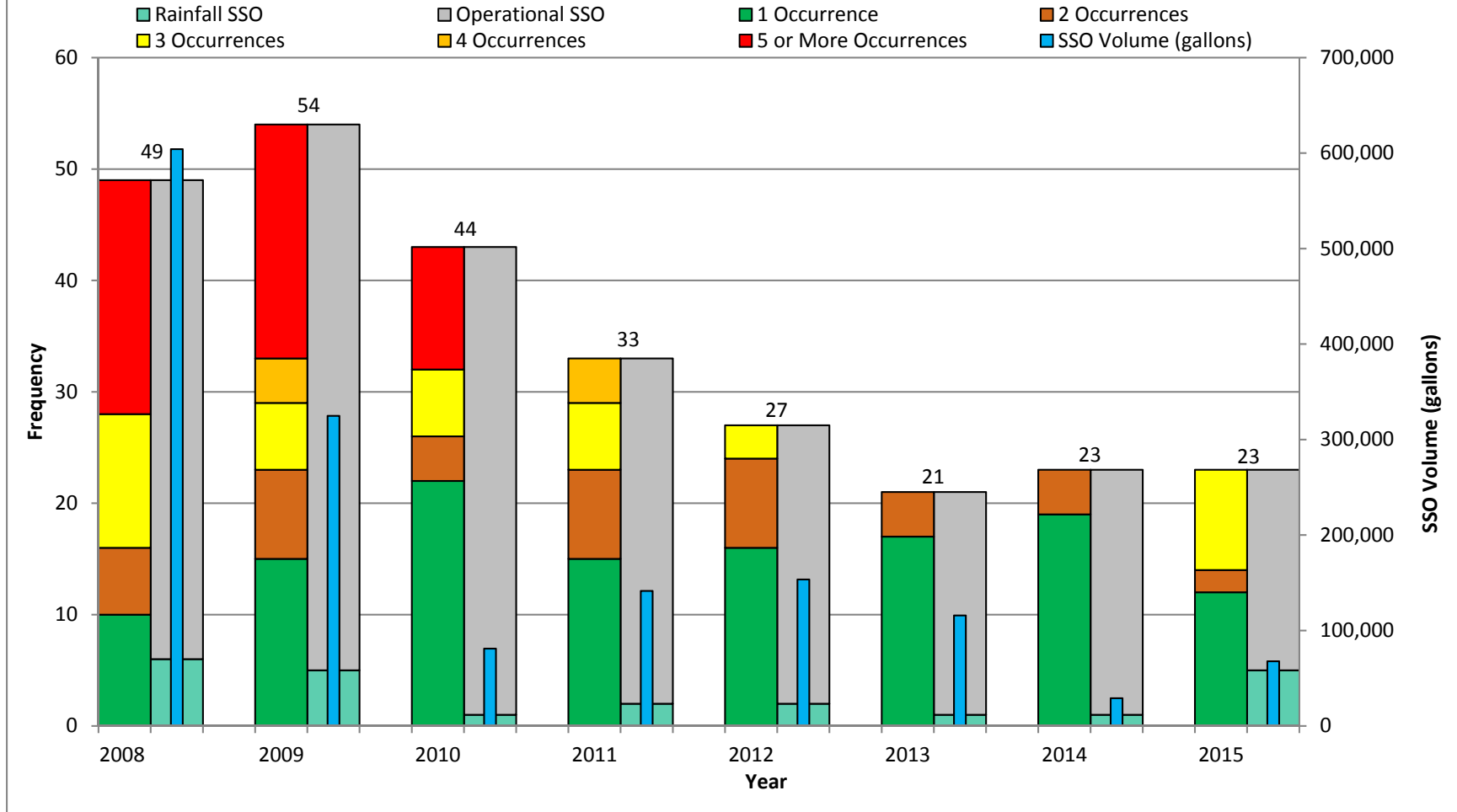
Item No.	Begin	End	Self-Performed Activities	Amount
1	7/2015	Ongoing	Smoke Testing - Basin 5 and Point Repairs	\$30,500
2	2014	Ongoing	Physical Investigation of Possible I&I Sources (Basins 5/6)	\$6,500
3	2014	Ongoing	Manhole Repairs	\$6,500
4	2014	2014	Pipeline Analysis Flow Monitoring Study	\$25,700
5	2016	Ongoing	ACT (Annual Contract) Sewer System Rehab	\$300,000
6	2016	2017	System Evaluation and Capacity Assurance Plant	\$222,784
Current Total				\$591,984

Table 1-3: Capital Cost for Self-Performed Activities for SSO Reduction

Further, in 2015 the City of Bryant commissioned Crist Engineers, Inc. to prepare Standard Specifications for Design and Construction of Water Lines and Sewer Lines. The City of Bryant began implementation of these standards for developers and the design of new construction the fourth quarter of 2015. A copy of the Standard Specification is included with this transmission.

In addition, the City of Bryant has developed standard operating procedures (S.O.P.'s) for public works activities, which include clearing stop-ups, containing manhole overflows, smoke testing, closed circuit television inspections, and fats, oil and grease interceptor inspections. This S.O.P. manual is attached to this submission for your reference.

City of Bryant - Exhibit 1: Total SSO Frequency and Volume



PLANNED CORRECTIVE ACTIONS

2.1 CURRENT STATUS

The City of Bryant has initiated a project with Crist Engineers and the RJN Group to perform an evaluation of the citywide sanitary sewer system. The scope of the project includes assessing the condition of selected sewer gravity lines (approximately 480,000 linear feet) by performing flow monitoring to determine the amount of wet weather and dry weather flows and build and calibrate a hydraulic model to assess the system under both dry and wet weather conditions. The hydraulic model of the citywide sewer system will include all gravity sanitary sewer lines within the system as well as select major pump stations and force mains. A hydraulic modeling report with capacity upgrades and alternatives analysis will be provided. Ultimately, a Capital Improvement Plan will be outlined to incorporate projects over a period time. An evaluation of the current sewer rate structure with funding alternatives will be considered.

2.2 FLOW MONITORING

The Engineer will review the available electronic mapping, the operational information for the collection system, and the proposed collection system network to identify key temporary flow meter locations. The Engineer shall prepare and present to the City a flow metering plan that describes the final temporary flow metering, equipment installation requirements (i.e. manhole access, traffic control, notification to landowners, assistance from the City staff, etc.), equipment maintenance requirements, data recording frequency, and termination and removal of the equipment following completion of the monitoring period.

Seven temporary flow meters will be maintained over the sixty (60) day monitoring period. Maintenance shall be carried out on a regular basis and includes calibration of the recording equipment, downloading of recorded data, onsite analysis of the data to ensure proper meter function, cleaning of the sensor, and replacement of any defective equipment. It is assumed that adequate weather conditions will be observed during the monitoring period so that dry weather and wet weather conditions that include at least three (3) storm events of different rainfall intensities are observed.

2.3 RAINFALL MONITORING

Four (4) rain gauge sites will be selected to obtain rainfall data during the monitoring period. The rain gauges will continuously record rainfall conditions during the monitoring period. Each rain gauge will also be inspected regularly and coincide with flow meter inspection.

2.4 HYDRAULIC MODEL

Utilizing the City's GIS database, as-built information available, and GPS survey performed as part of this project, a hydraulic model will be developed. Select 8-inch and all 10-inch diameter and larger sewer lines in the collection system will be input into the model based on the GPS survey data. All 6 and 8-inch diameter sewer lines will be input into the model based on the GIS database, as-built data available and City elevation contour data. Based on record drawings and design pump curves provided by the City, major lift stations will be input into the hydraulic model.

The model will be calibrated by adjusting various parameters in the model until the model flows match the depth, velocity, and flow recorded by the flow meters. Where the model data cannot be adjusted within acceptable parameters to match monitored conditions, field investigations may be performed to evaluate actual system performance.

2.5 SYSTEM EVALUATION CAPACITY ASSURANCE PLAN

The System Evaluation Capacity Assurance Plan (SECAP) will be developed that will include discussion of specific topic area including supporting information and exhibits: Executive Summary, System Description, Methodology, Flow Development and Analysis, Hydraulic Model Development, Model Assumptions, Model Calibration, Capacity Analysis, Inflow and Infiltration Reduction, Recommended Capital Improvements, Schedule of Improvements. The Schedule of Improvements will further outline recommendations of capital project needs to abate sanitary sewer overflows.

AMENDED AUGUST 6, 2018

2.5.1 SECAP VALIDATION

ADEQ has indicated a need to validate the SECAP and subsequent capital improvement plan (CIP) to demonstrate the effectiveness of inflow and infiltration reduction and CIP projects for the reduction of sanitary sewer overflows occurring in the collection system during the predicted wet weather event. Based upon the validation effort, it may be necessary to adjust, update, or amend the approach identified in the SECAP to assure the mitigation of sanitary sewer overflows.

The SECAP will identify and recommend a design storm event in order to evaluate the collection system's capacity to convey peak wet-weather flows where several criteria will be considered and are listed below in **Table 2.1 – SECAP Design Storm Criteria**.

Item No.	SECAP Design Storm Criteria
1	System sensitivity to rainfall
2	System reaction to rainfall derived infiltration
3	Permanent infiltration level when the storm occurs
4	Design storm frequency and duration used in the region

Table 2-1: Design Storm Criteria

The SECAP will prioritize capital improvements necessary to mitigate predicted, wet weather sanitary sewer overflows at the design storm event. SSES activities will be identified by basin ranked primarily by the severity of inflow and infiltration as determined by the Flow Development and Analysis. SSES activities will identify certain deficiencies and recommend repair techniques to reduce inflow and infiltration. At the completion of the Capital and SSES projects, outlined for each basin, a post Flow Development and Analysis will be conducted to evaluate the effectiveness of the SECAP Plan. The Flow Development and Analysis will compare predicted wet weather sanitary sewer overflows prior to the improvements and post improvements. Should adjustments be necessary to mitigate predicted sanitary sewer overflows at the design storm event the Corrective Action Plan will be updated and submitted to ADEQ for approval. The validation effort will be documented in the annual report.

SECTION 3

MILESTONE SCHEDULE

3.1 SCHEDULE

As previously indicated, compliance with the CAO requirements will be a staged implementation plan that will incorporate capital projects that will require funding sources through sewer rate increases or other available sources, such as sales tax. At the completion of the SECAP, which will be submitted to ADEQ for review, a capital improvement plan will establish a time line of projects.

Item No.	Corrective Action Description	Target Completion Date
1	Flow Monitoring and Rainfall Monitoring	December 31, 2016
2	Hydraulic Model	August 30, 2017
3	System Evaluation and Capacity Assurance (SECAP) Plan	September 29, 2017
4	Capital Improvement Plan and Schedule of Improvements	December 30, 2017

Table 3-1: Schedule